UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,293	10/28/2003	Matthew B. Dubin	H17-25994A1 (256.055US2)	5120

128 7590 09/22/2004

HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER	
BLACKMAN, ROCHELLE ANN J	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,293	DUBIN ET AL.	
	Examiner	Art Unit	
	Rochelle Blackman	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/28/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Finnila, U.S. Patent No. 5,847,784.

Regarding claims 1-11, Finnila discloses a tiled display apparatus with distortion control (FIGS. 1-8), comprising: a plurality of display devices (18), wherein each display device is subdivided into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5), and the plurality of sections for each display device are capable of displaying a plurality of sectional images (see function of 14 and 18) in response to display control signals (see controller or processor 36 signal arrows leading to element 14) applied to that display device; a screen (32); a plurality of lens assemblies (16) optically coupled to the plurality of display devices for projecting the sectional images of the display devices to form a tiled image (see FIGS. 3 and 7) on the screen; a detector (38) that detects the tiled image and generates feedback signals (see arrow leading from element 38 to processor 36 in FIGS. 1 and 5); and a display controller (36), coupled to the display devices and the detector, that generates the display control signals(see arrow leading from 36 to element 34 in FIGS. 1 and 5) to display a

commanded image on the screen, receives the feedback signals from the detector, and uses the feedback signals to reduce distortion (see col. 6, lines 15-20) on the screen; wherein the display controller generates the display control signals to display a desired image on the screen, the detector generates feedback signals representative of an actual image that is displayed, and the display controller uses the feedback signals to characterize an error between the desired image and the actual image (see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the display controller introduces an inverse error to subsequent display control signals to cancel out the error that was characterized (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the desired image is a grid of dots (see FIGS. 3 and 7); wherein at least one of the detector and an element displayed on the screen move with respect to each other (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the display controller determines the location of the element on the screen based upon the location of the detector and element when the element is detected (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the element is a dot located in a grid of dots (also see FIGS. 3); wherein the detector is located at a fixed location (see 38); wherein the

display controller generates the display control signals to display an element at each of a plurality of commanded locations, and the detector detects a plurality of locations at which the element is actually displayed which correspond to the commanded locations and generates feedback signals representative thereof (see function of display controller 36 and detector 38 in FIGS. 1, 5, 7, and 8 and also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the detector comprises multiple detectors (see *optical sensors* in col. 4, lines 60-63 and col. 5, lines 12-13 and lines 32-34); wherein the lens assemblies are optically symmetric (see 16).

Regarding claims 12-17, Finnila discloses a tiled display apparatus with distortion control (see FIGS. 1-8), comprising: an image generator (12) that generates display signals (see signal arrows leading from element 44 to element 36) indicative of a desired image; a plurality of display devices (18), wherein each display device is subdivided into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5), and the plurality of sections for each display device is capable of displaying a plurality of sectional images (see function of 14 and 18) in response to display control signals (see controller or processor 36 signal arrows leading to element 34) applied to that display device; a screen (32); a plurality of lens assemblies (16) optically coupled to the plurality of display devices for projecting the sectional images of the display devices to form a tiled image (see FIGS. 3 and 7) on the screen; a detector (38) that detects the tiled image and generates feedback signals (see arrow leading from element 38 to

processor 36 in FIGS. 1 and 5); and a display controller (36), coupled to the image generator, the display devices, and the detector, wherein the display controller generates the display control signals in response to the display signals to display the tiled image on the screen (see function of display controller 36 in FIGS. 1 and 5), and also receives the feedback signals from the detector and reduces distortion (see col. 6, lines 15-20) of the tiled image using the feedback signals; wherein the display controller generates the display control signals to display a desired pattern on the screen, the detector generates feedback signals representative of an actual pattern that is displayed, and the display controller uses the feedback signals to characterize error between the desired pattern and the actual pattern; wherein the desired pattern is a commanded pattern (see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein at least one of the detector and element displayed on the screen move with respect to each other (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the display controller determines the location of the element on the screen based upon the location of the detector and element when the element is detected (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein the detector is located at a fixed location (see location of detector 38).

Regarding claims 18-25, Finnila discloses a method of generating a tiled display with distortion control (see function of elements in FIGS. 1-8), comprising: providing a plurality of display devices (see function of 18); subdividing each of the display devices into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5); displaying a sectional image on each section of each display device (see function of 14 and 18); projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into a tiled image (see function of 30); detecting the tiled image and generating feedback signals therefrom (see function of 38); and using the feedback signals to reduce distortion on the screen (see function of 36 and see col. 6, lines 15-20); wherein the feedback signals are also used to reduce artifacts (see col. 4, lines 46-55); further comprising generating display control signals based upon a desired pattern in the tiled image (see function of 12), and wherein displaying the sectional image on each section of each display device is performed in response to the display control signals (see controller or processor 36 signal arrows leading to element 34); wherein the feedback signals are representative of the tiled image, and using the feedback signals includes comparing the desired pattern and tiled image (see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein using the feedback signals also includes determining an error between the desired pattern and tiled images, and wherein generating the display control signals includes using the error to correct for distortion in the tiled image (also see col. 4, lines 46-65, starting in col. 6, section II.

Alignment performed Continuously In Real Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein detecting the tiled image includes generating a detection signal (see signal arrow leading from element 38 to display controller 36) by creating motion (see col. 4, lines 56-65) between a detector (38) and an element (image(s) on display screen 32) displayed on the screen; wherein using the feedback signals include determining the location of the element based upon the relative position of the detector with respect to the element when the element is detected (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26); wherein detecting the tiled image includes generating a detection signal (see signal arrow leading from element 38 to display controller 36) by displaying an element at each of a plurality of commanded locations, and detecting a plurality of locations at which the element is actually displayed (also see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26).

Regarding claim 26, Finnila discloses an apparatus for generating a tiled display with distortion control (see FIGS. 1-8), comprising: a plurality of display devices (18); means for subdividing each of the display devices into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5); means for displaying a sectional image on each section of each display device (see function of 14 and 18); means for projecting the sectional image displayed on each section of each display device onto a screen (32) with the projected sectional images merged into a tiled image (see function of 16 and

30); means for detecting the tiled image and generating feedback signals therefrom (see function of 38); and means for using the feedback signals to reduce distortion on the screen (see function of 36 and see col. 6, lines 15-20).

Regarding claim 27, Finnila discloses for use in a tiled display apparatus (see FIGS. 1-8) comprising a plurality of display devices (18) that are each subdivided into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5) for displaying a plurality of sectional images (see function of 14 and 18), a screen (32) onto which the sectional images are projected to display a tiled image (see FIGS. 3 and 7), and a detector (38) that detects the tiled image and generates feedback signals (see arrow leading from detector 38 to processor 36 in FIGS. 1 and 5) therefrom, a display controller (36) comprising: means for generating display control signals (see controller or processor 36 signal arrows leading to element 34) that are based upon a desired image; means for applying the display control signals to the display devices to cause the plurality of sectional images to be displayed on the plurality of sections of each of the display devices (see arrow leading from display controller 36 to element 34); means for receiving the feedback signals from the detector(see arrow leading from detector 38 to display controller 36); and means for correcting the display control signals using the feedback signals to reduce error between the desired image and the tiled image (see col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 6, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26).

Regarding claim 28, Finnila discloses a computer readable medium (see *programmable logic controller* in col. 4, lines 46-55) having instructions thereon for causing a display controller (36) to perform a method of generating a tiled image with distortion control (see col. 6, lines 15-20), the tiled image being provided by a tiled display apparatus (see FIGS. 3 and 7) comprising a plurality of display devices (18) each of which is subdivided into a plurality of sections (see 14 of FIGS. 1 and 2 and division of 18 in FIG. 5) for displaying a plurality of sectional images, a screen (32) onto which the sectional images are projected to display the tiled image, and a detector (38) that detects the tiled image and generates feedback signals (see arrow leading from element 38 to processor 36 in FIGS. 1 and 5) therefrom, the method comprising: generating display control signals that are based upon a desired image (see function of processor or controller 36); applying the display control signals to the plurality of display devices to cause the plurality of sectional images to be displayed on the plurality of sections of each display device (see controller or processor 36 signal arrows leading to element 14); receiving the feedback signals from the detector (also see arrow leading from element 38 to processor 36 in FIGS. 1 and 5); and correcting the display control signals using the feedback signals to reduce error between the desired image and the tiled image (col. 4, lines 46-65, starting in col. 6, section II. *Alignment performed Continuously In Real* Time, col. 6, col. 8, lines 4-8, flow chart of FIG. 6 along with description thereof – col. 8, lines 9-26).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 7, 8, 27, 28, 37, and 40 of copending Application No. 09/746739 in view of Finnila, U.S. Patent No. 5,847,784.

The claimed "tiled display apparatus with distortion control" of claims 1,12, and 28 is met by the *tiled display apparatus* of claims 1 and *means for distortion control* of claim 27 of app. '739. The claimed "tiled display apparatus" of claims 27 and 28 is met by the *tiled display apparatus* of claim 1 of app. '739. The claimed "plurality of devices" of claims 1, 12, 27, and 28 are met by the *plurality of display devices* of claim 1 of app. '739. The claimed "plurality of sections" of claims 1, 12, 27, and 28 are met by the *plurality of sections* of claim 1 of app. "739. The claimed "plurality of sectional images" of claims 1, 12, 27, and 28 are met by the *each section is configured to display a sectional image* of claim 1 of app. '739. The claimed "screen" of claims 1, 12, 27, and

28 is met by the *screen* of claim 1 of app. '739. The claimed "plurality of lens assemblies" of claims 1 and 12 are met by the *plurality of lens assemblies* of claim 1 of app. '739. The claimed "lens assemblies are optically symmetric" of claim 11 is met by the *wherein each of the lens assemblies includes a projection lens* of claim 7 and the *each projection lens is symmetric* of claim 8 of app. '739. The claimed "method of generating a tiled display..." of claim 18 and 28 is met by the *method of generating a tiled display* of claim 28 of app. '739. The claimed "providing a plurality of display devices" of claim 18 is met by the *providing a plurality of display devices* of claim 28 of app. '739. The claimed "subdividing each of the display devices into a plurality of sections" is met by the *subdividing each of the display devices into a plurality of sections* of claim 28 of 'app. '739. The claimed "displaying a sectional image on each section of the each display device" of claim 18 is met by the *displaying a sectional image on each section of each display device* of claim 28 of app. '739. The claimed "projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into a tiled image" of claim 18 is met by the *projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into a tiled image* of claim 28 of app. '739. The claimed "apparatus for generating a tiled display with distortion control" of claim 26 is met by the *apparatus for generating a tiled display* of claim 37 and *means for distortion control* of claim 40 of app. '739. The claimed "plurality of display devices" of claim 26 is met by the *plurality of display devices* of claim 37 of app. '739. The claimed "means for subdividing each of the display devices into a plurality of

sections" of claim 26 is met by the *means for subdividing each of the display devices into a plurality of sections* of claim 37 of 'app. '739. The claimed "means for displaying a sectional image on each section of each display device" of claim 26 is met by the *means for displaying a sectional image on each section of each display device* of claim 37 of 'app. 739. The claimed "means for projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into the tiled image" of claim 26 is met by the *means for projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into the tiled image* of claim 37 of app. '739.

Claims 1, 7, 8, 27, 28, 37, and 40 of app. '739 do not disclose a "display controller", "generating display controls/ control signals", "generating feedback signals", a "detector", "detecting the tiled image", and "means for detecting the tiled image".

Finnila discloses a tiled projector having a controller or processor 36 that controls the positioning of image displays 14 and an optical sensor 38 for sensing the test image pattern projected by image displays 14 and is operable with controller or processor 36 to align image displays 14 during operation of display system 10, where the image displays 14 are moved and aligned with the intention of reducing or eliminating artifacts in observation (image) space and are continuously adjusted to prevent distortion of the composite image (see col. 4, lines 46-55, col. 5,lines 10-16, and col. 6, lines 15-20).

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide the claimed apparatus and method of claims 1, 7, 8, 27, 28, 37, and 40 of app. '739 with the controller or processor 36 and optical sensor 38 of the

Finnila reference, in order to adjust the plurality of display devices to reduce or eliminate artifacts and continuously adjust the plurality of display devices to prevent distortion of the composite image formed on the screen.

This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RB

Judy Nguyen

JUDY NGUYEN
PRIMARY EXAMINER